PyeSTImate USER GUIDE

✓ **Step 1:** enter room data into the excel sheet *room.xlsx*

Cell color legend:

- required entry
- optional entry
- automatically computed

Fields to be filled in (field – description):

Room	name of the room
length	length of the room in [m]
depth	depth (or width) of the room in [m]
height	internal height of the room in [m]

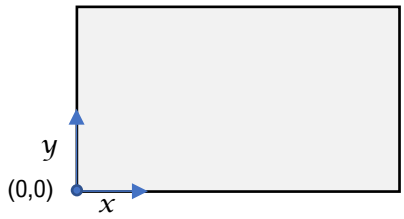

Fig.1 - Reference system for source and receivers' position

source_coordinates	coordinates (x, y, z) of the sound source (e.g., the speaker) in [m]
receiver_n_coordinates	coordinates (x, y, z) of the receivers (e.g., listeners) in [m]. It is possible to define up to 4 receivers' positions (*n = 1, 2, 3, 4*) according to Fig. 4 of the UNI 11532-2:2020 standard
Apers_n	occupants/audience configurations from Table C.1 of the UNI 11532-2:2020 standard or from the pyroomacoustics materials database. It is possible to define up to 5 types of occupants (*n = 1, 2, 3, 4, 5*) as string "C1-item" or "pyroomacoustics_keyword" from the dropdown menu
area_Apers_n	surface areas of occupants/audience in [m^2]
floor_material_n	floor materials from Table C.2 of the UNI 11532-2:2020 standard or from the pyroomacoustics materials database. It is possible to define up to 5 types of floor materials (*n = 1, 2, 3, 4, 5*) as string "C2-item" or "pyroomacoustics_keyword" from the dropdown menu
area_floor_material_n	floor area corresponding to the *n* material in [m^2]
ceiling_material_n	ceiling materials from Table C.2 of the UNI 11532-2:2020 standard or from the pyroomacoustics materials database. It is possible to define up to 5 types of ceiling materials (*n = 1, 2, 3, 4, 5*) as string "C2-item" or "pyroomacoustics_keyword" from the dropdown menu
area_ceiling_material_n	ceiling area corresponding to the *n* material in [m^2]
Aobj_11	fiberglass ceiling island defined at number 11 in the Table C.3 of the UNI 11532-2:2020 standard
area_ Aobj_11	fiberglass ceiling island area (if present, 0.00 otherwise) in [m^2]
wall_material_n	wall materials from Table C.2 of the UNI 11532-2:2020 standard or from the pyroomacoustics materials database. It is possible to define up to 5 types of wall materials (*n = 1, 2, 3, 4, 5*) as string "C2-item" or "pyroomacoustics_keyword" from the dropdown menu
Aobj_n	furniture from Table C.3 of the UNI 11532-2:2020 standard. It is possible to define up to 5 types of furniture (*n = 1, 2, 3, 4, 5*) as string "C3-item" from the dropdown menu

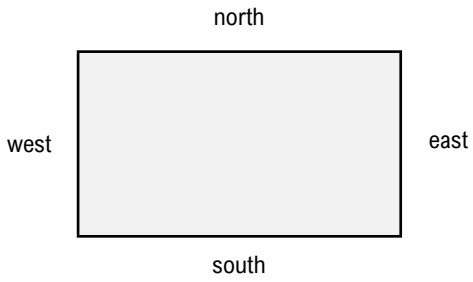

Fig.2 - Reference system for walls

area_south_wall_material_n	south wall area corresponding to the *n* material in [m^2]
area_east_wall_material_n	east wall area corresponding to the *n* material in [m^2]
area_north_wall_material_n	north wall area corresponding to the *n* material in [m^2]
area_west_wall_material_n	west wall area corresponding to the *n* material in [m^2]
area_south_wall_Aobj_n	furniture area adjacent to the south wall corresponding to the *n* object in [m^2]
area_east_wall_Aobj_n	furniture area adjacent to the east wall corresponding to the *n* object in [m^2]
area_north_wall_Aobj_n	furniture area adjacent to the north wall corresponding to the *n* object in [m^2]
area_west_wall_Aobj_n	furniture area adjacent to the west wall corresponding to the *n* object in [m^2]
scattering_floor	floor scattering coefficient (scalar)
scattering_ceiling	ceiling scattering coefficient (scalar)
scattering_south_wall	south wall scattering coefficient (scalar)
scattering_east_wall	east wall scattering coefficient (scalar)
scattering_north_wall	north wall scattering coefficient (scalar)
scattering_west_wall	west wall scattering coefficient (scalar)

✓ **Step 2:** enter simulation data into the file *config.json*

n_receivers	number of receivers (1, 2, 3, or 4) according to UNI 11532-2:2020
simulation_method	"ISM" (Image Source Model) or "Hybrid" (ISM/Ray Tracing)
rir_sampling_rate	sampling frequency of the RIR(s) in [Hz]
max_order_reflections	maximum order of the reflections (≥ 1 for ISM, -1 for Ray Tracing only, 3 (suggested) for the hybrid ISM/Ray Tracing method)
decay_db	decay in [dB] for which the Reverberation Time is estimated
speaker_gender	"male" or "female"
plot	if "true", room and RIR plots are displayed
print_recap	if "true", input data recap is printed

✓ **Step 3:** run the *sti.py* code

python --config_path ./config.json --materials_path ./materials.json sti.py > output.txt